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                 CA/CAplus now has more comprehensive patent assignee
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                 CAS patent authority coverage expanded
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                 ENCOMPLIT/ENCOMPLIT2 search fields enhanced
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         APR 28
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                 BEILSTEIN substance information now available on
                 STN Easy
                 DGENE, PCTGEN and USGENE enhanced with increased
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         MAY 14
                 limits for exact sequence match searches and
                 introduction of free HIT display format
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         MAY 15
                 INPADOCDB and INPAFAMDB enhanced with Chinese legal
                 status data
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         MAY 28
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                 records back to 1992
         JUN 01 CAS REGISTRY Source of Registration (SR) searching
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                 enhanced on STN
NEWS 17
         JUN 26
                 NUTRACEUT and PHARMAML no longer updated
                 IMSCOPROFILE now reloaded monthly
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         JUN 29
         JUN 29
NEWS 19
                 EPFULL adds Simultaneous Left and Right Truncation
                  (SLART) to AB, MCLM, and TI fields
NEWS 20
         JUL 09
                 PATDPAFULL adds Simultaneous Left and Right
                 Truncation (SLART) to AB, CLM, MCLM, and TI fields
NEWS 21
         JUL 14
                 USGENE enhances coverage of patent sequence location
                  (PSL) data
NEWS 22
         JUL 27
                 CA/CAplus enhanced with new citing references
NEWS 23
         JUL 16
                 GBFULL adds patent backfile data to 1855
         JUL 21 USGENE adds bibliographic and sequence information
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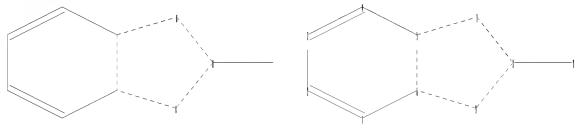
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http://www.cas.org/support/stngen/stndoc/properties.html

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chain nodes :

10

ring nodes :

1 2 3 4 5 6 7 8 9

chain bonds :

8-10

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 5-7 6-9 7-8 8-9

exact/norm bonds :

1-2 1-6 2-3 3-4 4-5 5-6 5-7 6-9 7-8 8-9 8-10

Match level:

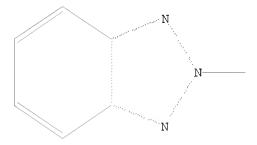
1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:CLASS

L1 STRUCTURE UPLOADED

=> d

L1 HAS NO ANSWERS

L1 STR



Structure attributes must be viewed using STN Express query preparation.

=> s 11

SAMPLE SEARCH INITIATED 11:42:31 FILE 'REGISTRY'
SAMPLE SCREEN SEARCH COMPLETED - 4231 TO ITERATE

47.3% PROCESSED 2000 ITERATIONS

50 ANSWERS

INCOMPLETE SEARCH (SYSTEM LIMIT EXCEEDED)

SEARCH TIME: 00.00.01

FULL FILE PROJECTIONS: ONLINE **COMPLETE**
BATCH **COMPLETE**

PROJECTED ITERATIONS: 80719 TO 88521 PROJECTED ANSWERS: 1680 TO 2974

L2 50 SEA SSS SAM L1

=> s l1 ful

FULL SEARCH INITIATED 11:42:35 FILE 'REGISTRY'
FULL SCREEN SEARCH COMPLETED - 84204 TO ITERATE

100.0% PROCESSED 84204 ITERATIONS 2951 ANSWERS

SEARCH TIME: 00.00.01

L3 2951 SEA SSS FUL L1

=> fil caplus

COST IN U.S. DOLLARS SINCE FILE TOTAL

ENTRY SESSION

FULL ESTIMATED COST 185.88 186.10

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FILE COVERS 1907 - 27 Jul 2009 VOL 151 ISS 5

FILE LAST UPDATED: 26 Jul 2009 (20090726/ED)

REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2009

USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2009

CAplus now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2009.

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This file contains CAS Registry Numbers for easy and accurate substance identification.

The ALL, BIB, MAX, and STD display formats in the CA/CAplus family of databases have been updated to include new citing references information. This enhancement may impact record import into database management software. For additional information, refer to NEWS 22.

=> s 13 L4 810 L3

=> s 14 and electroluminescent 85679 ELECTROLUMINESCENT 8 ELECTROLUMINESCENTS 85682 ELECTROLUMINESCENT

(ELECTROLUMINESCENT OR ELECTROLUMINESCENTS)

L5 5 L4 AND ELECTROLUMINESCENT

=> d ibib abs hitstr tot

L5 ANSWER 2 OF 5
ACCESSION NUMBER:
DOCUMENT NUMBER:
DOCUMENT NUMBER:
148:79653
Synthesis and electroluminescent properties of a phenothiazine-based polymer for nondoped polymer light-emitting diodes with a stable orange-red emission

AUTHOR(S):
Liu, Yingliang, Cao, Huayu, Li, Jianghui, Chen, Zhijian, Cao, Shaokui, Xiao, Lixin, Xu, Shengang, Gong, Qihuang

CORPORATE SOURCE:
State Key Laboratory for Mesoscopic Physics, Department of Physics, Peking University, Beijing, 100871, Peop. Rep. China
Journal of Polymer Science, Part A: Polymer Chemistry (2007), 45(21), 4867-4879

PUBLISHER:
DOCUMENT TYPE:
John Wiley & Sons, Inc.
Journal John Wiley & Sons, Inc.

John Wiley & Sons, Inc.

MENT TYPE: Journal

UNGE: English

A novel phenothiazine-based polymer was synthesized through the Heck
reaction of 3,7-divinyl-N-octyl-phenothiazine with

4,7-dibromo-2-octylbenzotriazole according to the alternating
donor-acceptor strategy. The polymer was characterized with 1H NMR, IR
spectroscopy, gel permeation chromatog., cyclic voltammetry, UV-visible
spectroscopy, and fluorescence spectroscopy. With the polymer used as an
active layer, three nondoped polymer light-emitting diodes (PLEDs) with a
double-layer configuration were fabricated by the spin-coating approach
with different thermal annealing processes. The emission maximum in
electroluminescent spectra was stabilized at 616 nm. The maximum
luminance reached 242 cd/m2. The coordinate value of Commission
International de l'Eclairage 1931 in the double-layer PLEDs after the
thermal treatment was nearly stabilized at (x, y) = (0.62, 0.38). DOCUMENT TYPE: LANGUAGE:

Addnl

the luminous efficiency of device II reached a balanceable state with an increase in the current. Therefore, the polymer had an orange-red emission with stable chromaticity coordinates under different driving voltages. Finally, a nondoped device with a stable luminous efficiency and chromaticity was obtained. 960509-84-69 960509-85-7P

960509-84-6P 960509-85-7P
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(synthesis and electroluminescent properties of
phenothiazine-based polymer for nondoped polymer light-emitting diodes
with stable orange-red emission)
960509-84-6 CAPLUS
10R-Phenothiazine, 3,7-diethenyl-10-octyl-, polymer with
4,7-dibromo-2-octyl-2H-benzotriazole (CA INDEX NAME)

CM 1

CRN 960509-83-5 CMF C14 H19 Br2 N3

ANSWER 1 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued)

СМ 2

960509-82-4

1159011-55-8 CAPLUS

Poly[(10-octyl-10H-phenothiazine-3,7-diyl)-(1E)-1,2-ethenediyl(2-octyl-2H-benzotriazole-4,7-diyl)-(1E)-1,2-ethenediyl] (CA INDEX NAME)

REFERENCE COUNT:

17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR

RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

ANSWER 2 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued)

960509-82-4 C24 H29 N S

960509-85-7 CAPLUS

Poly[(10-octyl-10H-phenothiazine-3,7-diyl)-1,2-ethenediyl(2-octyl-2H-benzotriazole-4,7-diyl)-1,2-ethenediyl] (CA INDEX NAME)

$$\begin{array}{c|c} CH = CH \\ \hline \\ Me - (CH_2) 7 \\ \hline \\ Me - (CH_2) 7 \\ \hline \\ Me - (CH_2) 7 \\ \hline \end{array}$$

112642-69-0P 960509-83-5P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis and electroluminescent properties of phenothiazine-based polymer for nondoped polymer light-emitting diodes with stable orange-red emission)
112642-69-0 CAPLUS

ANSWER 2 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN 2H-Benzotriazole, 2-octyl- (CA INDEX NAME) (Continued)

960509-83-5 CAPLUS

2H-Benzotriazole, 4,7-dibromo-2-octyl- (CA INDEX NAME)

OS.CITING REF COUNT: RECORD

THERE ARE 6 CAPLUS RECORDS THAT CITE THIS

(6 CITINGS)
THERE ARE 55 CITED REFERENCES AVAILABLE FOR REFERENCE COUNT:

RECORD. ALL CITATIONS AVAILABLE IN THE RE

ANSWER 3 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued)

851106-87-1 IT

RL: RCT (Reactant), RACT (Reactant or reagent)
(fluorene-based copolymers for color-stable blue light-emitting diodes)

es) 851106-87-1 CAPLUS 2H-Benzotriazole, 4,7-dibromo-2-hexyl- (CA INDEX NAME)

OS.CITING REF COUNT:

THERE ARE 6 CAPLUS RECORDS THAT CITE THIS

REFERENCE COUNT:

(6 C1T1NGS)
THERE ARE 30 CITED REFERENCES AVAILABLE FOR

FORMAT

RECORD. ALL CITATIONS AVAILABLE IN THE RE

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L5 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2009 ACS ON STN ACCESSION NUMBER: 2007:499456 CAPLUS DOCUMENT NUMBER: 147:41829
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TITLE:

147:41829
Pluorene-based copolymers for color-stable blue light-emitting diodes
Sun, Mingliang; Niu, Qiaoli; Yang, Renqiang; Du, Bin; Liu, Ransheng; Yang, Wei; Peng, Junbiao; Cao, Yong Institute of Polymer Optoelectronic Materials and Devices, Key Laboratory of Special Functional Materials, South China University of Technology, Guangzhou, 510640, Peop. Rep. China European Polymer Journal (2007), 43(5), 1916-1922 CODEN: EUPJAG; ISSN: 0014-3057
Elsewier Ltd.
Journal
English
opolymers (PFO-HBT) derived from 9,9-dioctylfluorene AUTHOR(S): CORPORATE SOURCE:

SOURCE:

PITRI.TSHER .

CODEN: EDPJAG; ISSN: 0014-3057

PUBLISHER: Elsevier Ltd.

DOCUMENT TYPE: Journal

AB Random conjugated copolymers (PFO-HBT) derived from 9,9-dioctylfluorene (DOF) and 2-hexylbenzotriazole (HBT) were prepared by the Pd-catalyzed Suzuki coupling reaction with the feed HBT molar ratio around 1%, 5% and 15%. By copolymg, 2-hexylbenzotriazole into the backbone of polyfluorene, an efficient colorfast blue light-emitting polymer system is developed. The device with the structure of ITO (In Sn oxide)/PEDDT/PK/PFO-HBTI/Ba/Al exhibits the highest external quantum efficiency 1.62% with luminance efficiency of 2.69 cd/A, power efficiency of 1.25 lm/W and the CIE coordinates of (0.15, 0.17). The L spectra are stable at the increased c.d. and continuous operation without significant change of CIE.

IT 938181-99-8P

RI. PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREF (Preparation); USES (Uses)

es)
938181-99-8 CAPLUS
2H-Benzotriazole, 4,7-dibromo-2-hexyl-, polymer with
2,7-dibromo-9,9-dioctyl-9H-fluorene and
2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-1,3,2-dioxaborolane] (CA INDEX NAME)

CM 1

CRN 851106-87-1 CMF C12 H15 Br2 N3

CM 2

CRN 198964-46-4 CMF C29 H40 Br2

L5 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 2006;367294 CAPLUS
DOCUMENT NUMBER: 144:413585
TITLE: Production of high quantum yield luminescent

oligomers and polymers and their uses Morishita, Yoshii; Nomura, Satoyuki; Tsuda,

INVENTOR(S): Yoshihiro;

Tai, Seiji; Marrocco, Matthew, L., III; Motamedi, Farshad, J.; Wang, Li-Sheng; Liang, Yongchao Hitachi Chemical Co., Ltd., Japan; Maxdem

PATENT ASSIGNEE(S):

PCT Int. Appl., 168 pp. CODEN: PIXXD2 Patent English Incorporated SOURCE:

DOCUMENT TYPE: LANGUAGE: FAMILY ACC. NUM. COUNT: PATENT INFORMATION:

| PATENT | | | | | | | | | | | | | | | | |
|----------------|-------|------|-----|-----|-------------|-------------------------|------|-----------------|----|-------|----------|----------|----------|-----|------|-----|
| | | | | | | | | | | | | | | | | |
| WO 2006041221 | | | | A1 | | 20060420 | | WO 2005-JP19352 | | | | | 20051014 | | | |
| W: | AE, | AG, | AL, | AM, | AT, | AU, | AZ, | BA, | BE | , BG, | BR, | BW, | BY, | BZ, | CA, | CH, |
| | CN, | co, | CR, | CU, | CZ, | DE, | DK, | DM, | D2 | , EC, | EE, | EG, | ES, | FI, | GB, | GD, |
| | GE, | GH, | GM, | HR, | HU, | ID, | IL, | IN, | IS | , JP, | KE, | KG, | KM, | KP, | KR, | KZ, |
| | LC, | LK, | LR, | LS, | LT, | LU, | LV, | LY, | MA | , MD, | MG, | MK, | MN, | MW, | MX, | MZ, |
| | NA. | NG. | NI. | NO. | NZ. | OM. | PG. | PH. | PL | , PT, | RO. | RU. | SC. | SD. | SE. | SG. |
| | | | | | | | | | | , TZ, | | | | | | |
| | YU. | ZA. | ZM. | ZW | | | | | | | | | | | | |
| RW: | AT. | BE. | BG. | CH. | CY. | CZ. | DE. | DK. | EE | , ES, | FI. | FR. | GB. | GR. | HU. | IE. |
| | | | | | | | | | | , RO, | | | | | | |
| | | | | | | | | | | , MR, | | | | | | |
| | | | | | | | | | | TZ. | | | | | | |
| | KG. | KZ. | MD. | RU. | TJ. | TM | | | | | | | | | | |
| US 20060083945 | | | | A1 | | 20060420 US 2004-966370 | | | | | 20041015 | | | | | |
| JP 2008516008 | | | T | | 20080515 JP | | | 2007-516129 | | | | 20051014 | | | | |
| CN 1012 | 03538 | 3 | | A | | 2008 | 0618 | | CN | 2005- | 8003 | 5298 | | 2 | 0070 | 416 |
| KR 2007 | 11858 | 32 | | A | | 2007 | 1217 | | KR | 2007- | 7108 | 93 | | 2 | 0070 | 514 |
| KR 9046 | 06 | | | Bl | | 2009 | 0625 | | | | | | | | | |
| PRIORITY APP | LN. | INFO | . : | | | | | | US | 2004- | 9663 | 70 | | A 2 | 0041 | 015 |
| | | | | | | | | | WO | 2005- | JP19 | 352 | | w 2 | 0051 | 014 |

The invention relates generally to novel high quantum yield luminescent monomers, oligomers, and polymers, comprising benzotriazole repeating units and derivs. thereof have been discovered and utilized in optical devices and components therefor, including electroluminescent devices, light emitting devices, photoluminescent devices, organic light emitting diodes (OLEDs), OLED displays, lights, as sensors, UV stabilizers, and the like. Thus, a 1,4-dibromo-2,5-bishexyloxypene-2,5-bishexyloxyp-1,4-benzenebisboronic ethylene glycol ester-2,4-di-text-butyl-6-(4,7-dibromobenzotriazol-2-yl)-phenol copolymer with FL peak at 495 nm (green color) was prepared and coated on a Paytron P-coated ITO glass and followed by vapor deposited an Al film to give an EL device with high quantum yield.

851106-87-1P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation);

(Reactant or reagent)

ANSWER 4 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued)
(monomer; prodm. of high quantum yield luminescent monomers, oligomers and polymers for electroluminescent devices)
851106-87-1 CAPLUS
2H-Benzotriazole, 4,7-dibromo-2-hexyl- (CA INDEX NAME) L5

/(CH₂)₅-Me

IT 383741-51-3, 4,6-Dibromo-2-hexyl-2H-benzotriazole
883741-52-4, 5,6-Dibromo-2-hexyl-2H-benzotriazole
RL: RCT (Reactant); RACT (Reactant or reagent)
(monomer; production of high quantum yield luminescent monomers,
cligomers
and polymers for electroluminescent devices)
RN 883741-51-3 CAPLUS
CN 2H-Benzotriazole, 4,6-dibromo-2-hexyl- (CA INDEX NAME)

∠ (CH2)5-Me

883741-52-4 CAPLUS 2H-Benzotriazole, 5,6-dibromo-2-hexyl- (CA INDEX NAME) CN

N (CH2)5-Me

883741-45-5P, 1,4-Dibromo-2,5-bishexyloxybenzene-2,5-bishexyloxy-1,4-benzenebisboronic ethylene glycol ester-4,7-dibromo-2-hexyl-2H-benzoriazole copolymer 883741-46-6P, 1,4-Dibromo-2,5-bishexyloxybenzene-2,5-dihexy-1,4-benzenebisboronic ethylene glycol ester-4,7-dibromo-2-hexyl-2H-benzortlazole copolymer 83741-47-7P, 4-Bromo-N-(4-bromopheny1)-N-phenylbenzenamine-2,5-bishexyloxy-1,4-benzenebisboronic ethylene glycol ester-4,7-dibromo-2-hexyl-2H-benzortlazole copolymer RI: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); PREP (Preparation); USES (Uses) (production of high quantum ydeld luminescent monomers, oligomers and polymers for electroluminescent devices) IT

L5 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued)

CRN 883741-17-1 CMF C22 H36 B2 O4

Me- (CH2) 5 (CH2) 5-Me

CM

CRN 851106-87-1 CMF C12 H15 Br2 N3

(CH₂)₅-Me

CM 3

CRN 128424-36-2 CMF C18 H28 Br2 O2

. О- (СН₂) 5-ме Me- (CH2) 5-0

883741-47-7 CAPLUS
Benzenamine, 4-bxcmo-N-(4-bxomophenyl)-N-phenyl-, polymer with
2,2'=[2,5-bis (hexyloxy)-1,4-phenylene]bis[1,3,2-dioxaborolane] and
4,7-dibromo-2-hexyl-2H-benzotriazole (9CI) (CA INDEX NAME)

ANSWER 4 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued) 883741-45-5 CAPLUS 2H-Benzotriazole, 4,7-dibromo-2-hexyl-, polymer with 2,2'-[2,5-bis(hexyloxy)-1,4-phenylene]bis[1,3,2-dioxaborolane] and 1,4-dibromo-2,5-bis(hexyloxy)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 851106-87-1 CMF C12 H15 Br2 N3

 $\mathbb{C}\mathbb{M}$ 2

CRN 849691-48-1 CMF C22 H36 B2 O6

CM 3

CRN 128424-36-2 CMF C18 H28 Br2 O2

$$\begin{array}{c} \text{Br} & \text{O}^-\text{(CH}_2)_5\text{--Me} \\ \text{Me}^-\text{(CH}_2)_5\text{--}\text{O} & \text{Br} \end{array}$$

883741-46-6 CAPLUS
2H-Benzotriazole, 4,7-dibromo-2-hexyl-, polymer with
1,4-dibromo-2,5-bis(hexyloxy)benzene and
2,2'-(2,5-dihexyl-1,4-phenylene)bis[1,3,2-dioxaborolane] (9CI) (CA INDEX NAME)

CM 1

ANSWER 4 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN (Continued)

849691-48-1 C22 H36 B2 O6

Me- (CH2)5-0

CM 3

CRN 81090-53-1 CMF C18 H13 Br2 N

REFERENCE COUNT:

THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE

FORMAT

L5 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2009 ACS on STN
ACCESSION NUMBER: 1997:389127 CAPLUS
DOCUMENT NUMBER: 127:10877
CRIGINAL REFERENCE NO.: 127:2133a,2136a
TITLE: Electroluminescent device elements
INVENTOR(S): Roitman, Daniel B.
PATENT ASSIGNEE(S): Hewlett Packard Co., USA
Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKCKAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|------------------|----------|
| | | | | |
| JP 09106889 | A | 19970422 | JP 1996-141457 | 19960604 |
| JP 3951067 | B2 | 20070801 | | |
| US 5629389 | A | 19970513 | US 1995-463141 | 19950606 |
| PRIORITY APPLN, INFO.: | | | US 1995-463141 A | 19950606 |

The elements comprise a hole-injecting electrode, a hole-transporting phosphor; an electron-transporting and an electron injecting layer, where the phosphor layer contains an organic polymer and a phenol additive >4%. 163674-04-2

Ri: DEV (Device component use); USES (Uses)
(electroluminescent device elements)
163674-04-2 CAPLUS
Phenol, 2-(2H-benzotriazol-2-ylmethyl)-4,6-bis(1-methyl-1-phenylethyl)-(CA INDEX NAME)

OS.CITING REF COUNT: 11 THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)

| => log y COST IN U.S. DOLLARS | SINCE FILE ENTRY | TOTAL SESSION |
|--|---------------------|------------------|
| FULL ESTIMATED COST | 30.94 | 217.04 |
| DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS) | SINCE FILE ENTRY | TOTAL SESSION |
| CA SUBSCRIBER PRICE | -4.10 | -4.10 |

STN INTERNATIONAL LOGOFF AT 11:43:03 ON 27 JUL 2009